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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

AVELLINO, JOSEPH E

ART UNIT	PAPER NUMBER
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2143

DATE MAILED: 12/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/384,932

Applicant(s)

TONDERING, CLAUS

Examiner

Joseph E. Avellino

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 and 25-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23, 25-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-23, and 25-38 are pending in this examination.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-11, 13, 17-21, 25-26, 29-30, 33-34, and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hauser et al. (USPN 5,889,956) (cited as pertinent prior art in previous Office Action) (hereinafter Hauser) in view of Nicola et al. ("Fast Simulation of the Leaky Bucket Algorithm" Proceedings of the 1994 Winter simulation Conferences Society for Computer Simulation International (c) 1994) (hereinafter Nicola).

2. Referring to independent claims 1, 10, 17, and 18, (e.g. exemplary claim 1), Hauser discloses a method comprising:

representing, by a current resource usage value (i.e. actual use), a total amount of a resource that is managed by a software tool and is currently in use by both a first process and a second process (col. 5, lines 30-35; col. 8, lines 40-62);

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for each of the first and second processes, specifying a maximum current usage level that is associated with the process (i.e. maximum allowed) (Figure 3, ref. 306, 308);

in response to a request by one of the processes for additional use of the resource, allowing the process to make the requested additional use and increasing the current usage value by the amount of requested additional use, provided that the requested additional use plus the current usage would not exceed the maximum current usage level (i.e. Max_allowed) associated with the requesting process (Figure 3, ref. 302-312; col. 8, line 62 to col. 9, line 48).

Hauser does not disclose that the total resource usage is decreased using a preset amount per unit of time. However it is well known and expected in the art that a system has the ability to have a resource usage decreased using a preset amount per unit of time. In support of this statement Nicola discloses a leaky bucket algorithm wherein tokens are generated at a fixed interval (i.e. preset amount per unit of time) (p. 266, col. 2, ¶ 2). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Nicola with Hauser to effectively police a QoS algorithm thereby increasing the fairness of the system and allowing starved processes access to the resource as supported by Nicola p. 266, col. 2, ¶ 1).

3. Referring to claim 2, Hauser discloses the resource is memory space (Figure 5; col. 6, lines 26-65).

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4. Referring to claim 3, Hauser discloses the network comprises an embedded computer system (col. 6, lines 25-43).

5. Referring to claim 4, Hauser discloses the network operates in a real-time networking environment (col. 3, lines 45-65).

6. Referring to claim 5, Hauser does not specifically disclose the system is modeled as a leaky bucket. In analogous art, Nicola discloses that the system is a leaky bucket system (p. 266, col. 2, ¶ 2). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Nicola with Hauser to effectively police a QoS algorithm thereby increasing the fairness of the system and allowing starved processes access to the resource as supported by Nicola p. 266, col. 2, ¶ 1).

7. Referring to claim 6, Hauser does not specifically disclose determining a priority of a resource and allocating the resource based on the priority, however it is well known that resources can be prioritized (i.e. preferred servers over mirror sites, high speed pipeline over a telephone modem connection, etc.) therefore it would have been obvious to provide a prioritized resource schedule to allow for higher prioritized resources to be used before lower resources, which might be more easily subjected to congestion than the preferred resources.

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8. Referring to claim 7, Hauser discloses adjusting a maximum current usage value (col. 9, lines 15-60).

9. Referring to claim 8, Hauser discloses notifying the process that additional use of the resource is allowed when the requested additional use plus the current usage value would not exceed the maximum current usage level associated with the requesting process (col. 5, lines 7-47).

10. Referring to claim 9, Hauser discloses notifying the requesting process comprises sending a message to a network address associated with the requesting process (it is inherent that a client on a network as a network address and that any message sent to the client is sent to the address of the client) of the process (col. 5, lines 7-47).

11. Claims 11, 13, and 19-21 are rejected for similar reasons as stated above.

12. Referring to claim 25, Hauser discloses a method of managing usage in a resource as stated in the claims above. Hauser does not disclose determining a priority for a process for a resource and allocating the resource based on the priority. However it is well known in the art that higher priority processes (i.e. interrupt threads in a computer, master computer nodes in a network, etc.) get preference over lower priority processes (i.e. garbage collection, other menial system processes, etc.) for resource

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contention since they are of higher importance. Therefore it would have been obvious to one of ordinary skill in the art to provide for prioritizing resource allocation based on the priority of the processes to allow for higher priority processes not to be impeded by a lower priority process.

13. Referring to claim 29, Hauser discloses the invention substantively as described in claim 1. Hauser does not specifically state if increasing the current usage exceeds a maximum, waiting until such time as by increasing will not exceed a maximum. Nicola discloses in the standard leaky bucket algorithm that if there are not tokens left in the bank, then the transaction is either queued in a buffer or lost (p. 226, col. 2, ¶ 2). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Nicola with Hauser to effectively police a QoS algorithm thereby increasing the fairness of the system and allowing starved processes access to the resource as supported by Nicola p. 266, col. 2, ¶ 1).

14. Referring to claim 30, Hauser discloses invention substantively as described in claim 1. Hauser does not state the decreasing of the current usage value is independent of the amount of use of the resource by the process. Nicola discloses in the standard leaky bucket algorithm that the decreasing is performed at fixed intervals (regardless of the amount of usage by the processes (p. 226, col. 2, ¶ 2). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Nicola with Hauser to effectively police a QoS algorithm

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thereby increasing the fairness of the system and allowing starved processes access to the resource as supported by Nicola p. 266, col. 2, ¶ 1).

15. Claims 33-34, and 36-38 are rejected for similar reasons as stated above.

Claims 12, 14, 22, 23, 31, 32, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hauser in view of Nicola and further in view of Lowe (USPN 6,125,396).

16. Referring to claim 12, Hauser in view of Nicola disclose the invention substantively as described in the claims above. Hauser in view of Nicola do not disclose decrementing the maximum usage level of the software tool in response to the use of the resource associated with the tool by any of the plurality of devices. In analogous art, Lowe discloses decrementing the maximum usage level of the software tool in response to the use of the resource associated with the tool by any of the plurality of devices (col. 7, line 40 to col. 9, line 9). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Lowe with Hauser and Nicola since the system of Hauser and Nicola could deny an entity while it is still below its Minimum_Guaranteed level (i.e. an overallocation of resources) (col. 9, lines 1-15) and therefore this would lead one of ordinary skill in the art to search for other resource allocation systems, eventually finding Lowe and its teaching of using credits for overallocation of resources to a client (e.g. abstract).

17. Referring to claim 14, Hauser in view of Nicola disclose the invention substantively as described in the claims above. Hauser in view of Nicola do not disclose incrementing the maximum usage level to correspond to the usage level. In analogous art, Lowe further discloses incrementing the maximum usage level (assigned rate) to at least correspond to the specified usage level (i.e. usage level available on the resource) (e.g. abstract). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Lowe with Hauser and Nicola since the system of Hauser and Nicola could deny an entity while it is still below its Minimum_Guaranteed level (i.e. an overallocation of resources) (col. 9, lines 1-15) and therefore this would lead one of ordinary skill in the art to search for other resource allocation systems, eventually finding Lowe and its teaching of using credits for overallocation of resources to a client (e.g. abstract).

18. Referring to claim 22, Hauser in view of Nicola disclose the invention substantively as described in the claims above. Hauser in view of Nicola do not disclose the available amount of credit comprises a difference between a maximum resource usage allocated to the at least two processes and the amount of resource currently used by the at least two processes. In analogous art, Lowe discloses the available amount of credit comprises a difference between a maximum resource usage allocated to the at least two processes and the amount of resource currently used by the at least two processes (col. 8, lines 40-45). It would be obvious to a person of

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ordinary skill in the art at the time the invention was made to combine the teaching of Lowe with Hauser and Nicola since the system of Hauser and Nicola could deny an entity while it is still below its Minimum_Guaranteed level (i.e. an overallocation of resources) (col. 9, lines 1-15) and therefore this would lead one of ordinary skill in the art to search for other resource allocation systems, eventually finding Lowe and its teaching of using credits for overallocation of resources to a client (e.g. abstract).

19. Referring to claim 23, Hauser in view of Nicola disclose the invention substantively as described in the claims above. Hauser in view of Nicola do not disclose the available amount of credit increases per unit of time by an estimated value of the resource that becomes available per unit of time. In analogous art, Lowe discloses the available amount of credit increases per unit of time by an estimated value of the resource that becomes available per unit of time (col. 8, lines 17-23). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Lowe with Hauser and Nicola since the system of Hauser and Nicola could deny an entity while it is still below its Minimum_Guaranteed level (i.e. an overallocation of resources) (col. 9, lines 1-15) and therefore this would lead one of ordinary skill in the art to search for other resource allocation systems, eventually finding Lowe and its teaching of using credits for overallocation of resources to a client (e.g. abstract).

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20. Referring to claim 31, Hauser in view of Nicola disclose the invention substantively as described in the claims above. Hauser in view of Nicola do not disclose different software tools on different devices that are associated with a common resource have different specified maximum current usage levels. In analogous art, Lowe discloses different software tools on different devices that are associated with a common resource have different specified maximum current usage levels (i.e. different software tools for non-real time clients and real-time clients, since real-time clients have a reserve amount fixed at zero) (col. 6, lines 53-67). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Lowe with Hauser and Nicola since the system of Hauser and Nicola could deny an entity while it is still below its Minimum_Guaranteed level (i.e. an overallocation of resources) (col. 9, lines 1-15) and therefore this would lead one of ordinary skill in the art to search for other resource allocation systems, eventually finding Lowe and its teaching of using credits for overallocation of resources to a client (e.g. abstract).

21. Claims 31, 32, and 35, are rejected for similar reasons as stated above.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hauser in view of Nicola in view of Lowe in view of Harrington et al. (USPN 6,289,012) (hereinafter Harrington).

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22. Referring to claim 15, Hauser in view of Nicola in view of Lowe discloses disclose the method of managing a plurality of resources as stated in the claims above.

Although Hauser discloses allowing a resource to exceed its assigned rate, Hauser does not specifically state overriding the usage level to allow a device access to one of the plurality of resources. Harrington discloses when a pre-allocated memory element is not available, the list will override the reallocated space and the list "grows to add additional memory elements to the List" (col. 15, lines 25-30). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Harrington with Hauser, Nicola, and Lowe for more efficient data downloads and data resiliency as supported in Harrington (col. 3, lines 18-34).

23. Referring to claim 16, Hauser in view of Nicola in view of Lowe disclose the method of managing a plurality of resources as stated in the claims above. Hauser in view of Nicola in view of Lowe does not disclose destroying the software tool when requested. Harrington further discloses destroying the software tool in response to a request from one of the devices (col. 16, lines 52-56 and Figure 26). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Harrington with Hauser, Nicola and Lowe to allow for efficient memory management and to facilitate garbage collection in the system.

Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hauser in view of Nicola in view of Ho et al. (USPN 6,578,082) (hereinafter Ho).

24. Hauser in view of Nicola discloses a method of managing usage of resources as stated in the claims above. Hauser in view of Nicola does not specifically disclose the preset amount represents an estimated amount of resource which comes available per unit of time. Ho discloses the preset amount represents an estimated amount of resource which comes available per unit of time (col. 7, lines 18-41). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Hauser and Nicola with Ho to increase efficiency of the system by not calculating the actual resource availability, rather the estimated value, thereby reducing processing overhead and increasing throughput.

Response to Amendment

25. Applicant's arguments with respect to claims 1-23, and 25-38 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph E. Avellino whose telephone number is (571) 272-3905. The examiner can normally be reached on Monday-Friday 7:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on (571) 272-3923. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

JEA
December 10, 2004



DAVID WILEY
SUPERVISORY PATENT EXAMINER
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